



Global Eco Project Inno Eco Circular Economy in the Countryside



Castello di Gallano, Valtopina (Italy) April 2nd 2019

Introduction to the seminar

Dr. Massimo Canalicchio



GLOBAL ECO PROJECT PARTNERSHIP

LEADER

Pohjois-Satakunta

Project lead partner, from the South-Eastern part of Finland, within an area including 10 municipalities and 41,700 inhabitants. www.aktiivinen.fi



Project partner, from the North-Western part of Estonia, within an area including 2 municipalities and 17,500 inhabitants. www.vomentaga.ee



Project partner, from the Southern part of Latvia , within an area including 23 municipalities and 40,000 inhabitants. <http://aizkrauklespartneriba.lv/>



adelo

associação de desenvolvimento local da Bairrada e Mondego

Project partner, from the Central-Western part of Portugal, within an area including Baixo Mondego and Baixo Vouga. www.adelo.pt



Project partner, from the Southern part of the Sardinia island (IT), within an area including 7 municipalities and about 40,000 inhabitants. www.galcampidano.it



Project partner, from the middle of Italy, within an area including 23 municipalities and about 165,000 inhabitants. www.valleumbraesibillini.com



GLOBAL ECO PROJECT

Global Eco is a **transnational cooperation project** aiming to act as a result of the **EU's strategy priorities for competitive growth**, with processes and development models that use resources more efficiently and in a more sustainable way.

For this purpose **Circular Economy** can help prevent and correct environmental damages.

The Global Eco project focuses on **exchanges of good practices** and tangible pilot actions, to identify in the partner areas a **network of operators in the eco-innovation sector**.





GLOBAL ECO PROJECT

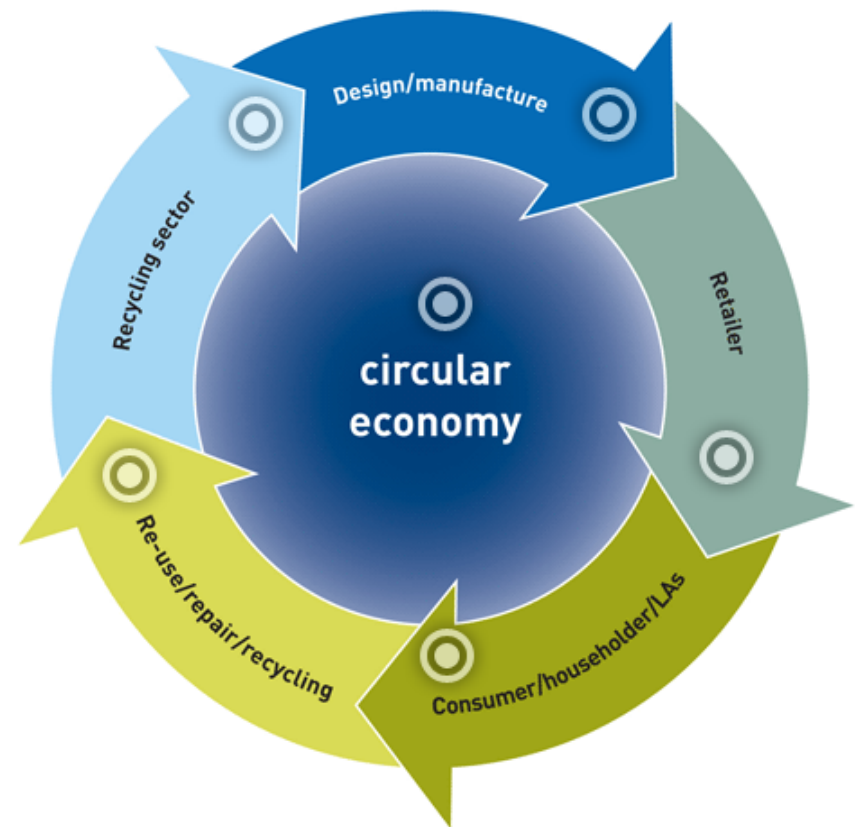
The project foreseen main actions are:

- **Exchange of good practices** and creation of a transnational "green economy" network and eco-innovation experiences;
- **Study visits, information and awareness actions, and workshops** at national and transnational level;
- **Networking of operators** and increasing **skills** in the field of **eco-innovation** and **circular economy** involving rural entrepreneurs and territorial actors;
- Enhancing **awareness in a wider audience** in eco-innovation approaches in participating territories



WHAT IS CIRCULAR ECONOMY?

- *A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.*



Learn more about circular economy .

from [Ellenmacarthurfoundation.org](https://www.ellenmacarthurfoundation.org)

<https://www.youtube.com/watch?v=zCRKvI>

FARMING AND CIRCULAR ECONOMY

From a linear economy ...

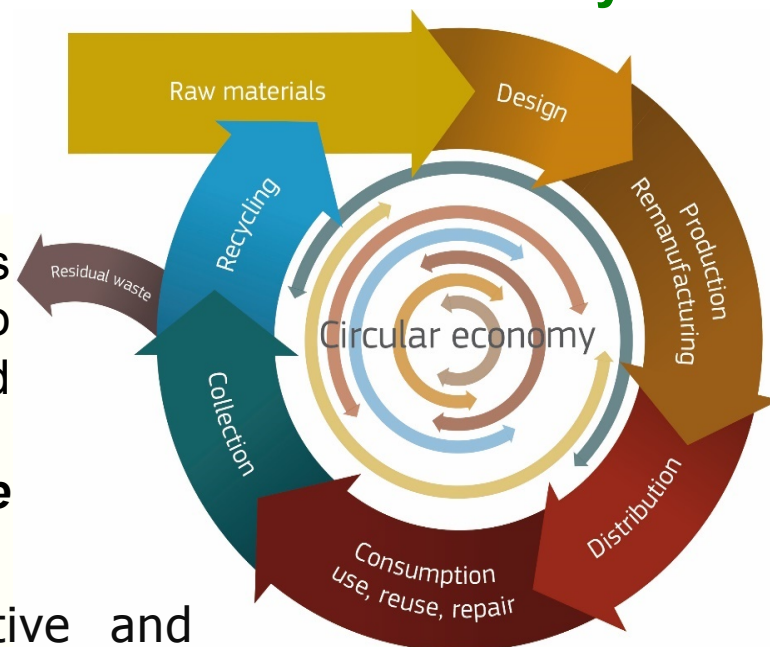


"In a world with growing pressures on resources and the environment, the EU has no choice but to go for the transition to a resource-efficient and ultimately regenerative circular economy."

*From **Manifesto for a Resource Efficient Europe**
17/12/2012*

"Transforming Europe into a more competitive and resource-efficient economy, where our reliance on non-renewable resources is reduced and where we can do more with less."

To a circular economy ...



Implementation of the Circular Economy Action Plan
European Commission 26/01/2017

THE EUROPEAN UNION AND CIRCULAR ECONOMY

COM(2014)398 – Communication: ‘Towards a circular economy: a zero waste programme for Europe’

- Sets out how to establish a framework to promote the circular economy;
- Communication sets out how to move the EU towards a zero-waste economy:
 - New innovations in markets for recycled materials;
 - New business models;
 - Eco-design
 - Industrial Symbiosis (re-use of wastes or by-products from a company to another)
- Combination of smart regulation, market-based instruments, incentives, information exchange, support for voluntary processes.



http://ec.europa.eu/environment/circular-economy/implementation_report.pdf

THE WASTE HIERARCHY

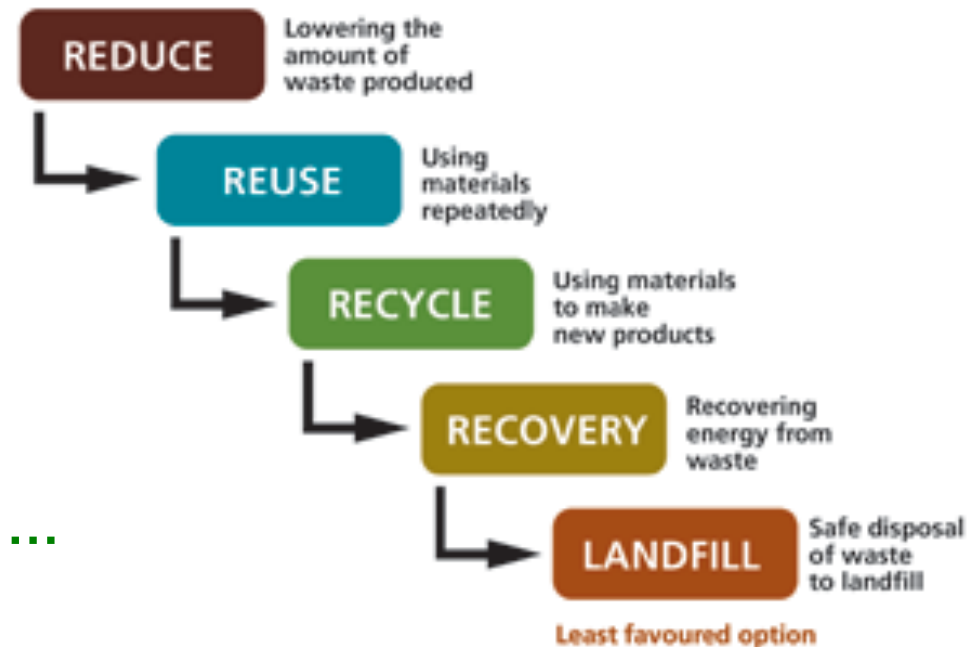
Waste reduce and reuse...

- Hierarchy informs and shapes EU waste policy;
- Waste hierarchy sets out most favourable to least favourable options for waste management;
- Reduction and reuse are most favoured options – fitting for the circular economy.

for a circular economy ...

Waste reduction hierarchy

Most favoured option





FARMING AND CIRCULAR ECONOMY IN THE EU

The agriculture and forestry sectors are relatively unique in depending on natural resources and cycles as their primary inputs. Resources such as **water**, **soils**, **nutrients** and **biodiversity** ensure the functioning of ecosystems and the land that provides the work environment. As demands on these resources grow within a linear economy, we risk depleting them beyond sustainable limits, and undermining the future of the primary sectors and the benefits they generate for society, that is why Europe has set up a series of measures for

Sustainable farming within Circular Economy Strategy Action Plan...

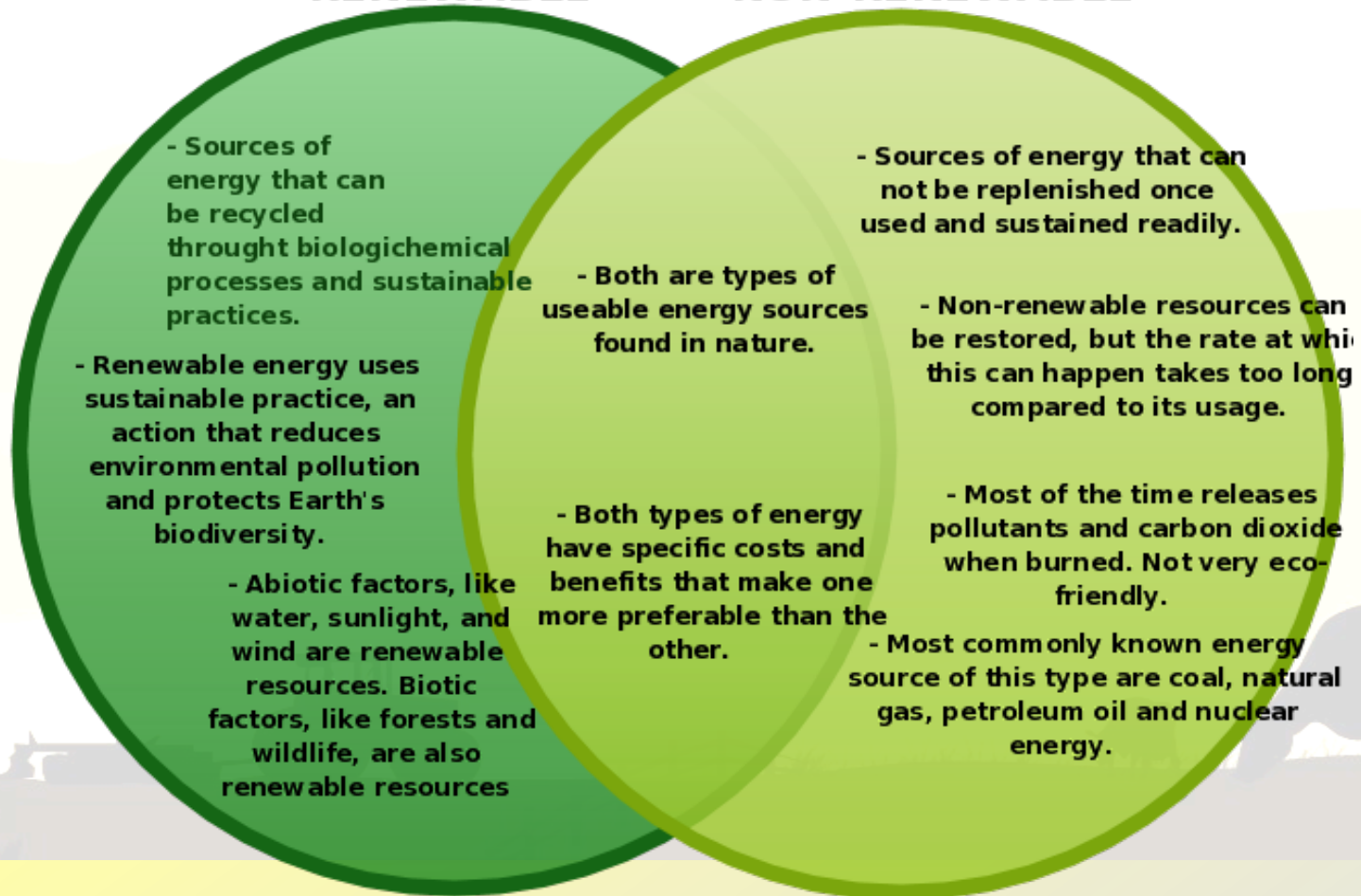
The Commission will

- ❑ revise the EU regulation on fertilizers to help develop an EU-wide market for bio-nutrients while ensuring safety and quality of the EU fertilisers;
- ❑ take a series of actions to encourage the reuse of treated waste water, including legislation on minimum requirements for water reuse;
- ❑ examine how chemicals, products and waste legislation can best work together, including proposals to improve the tracking of chemicals of concern in products.

RENEWABLE VS NON-RENEWABLE

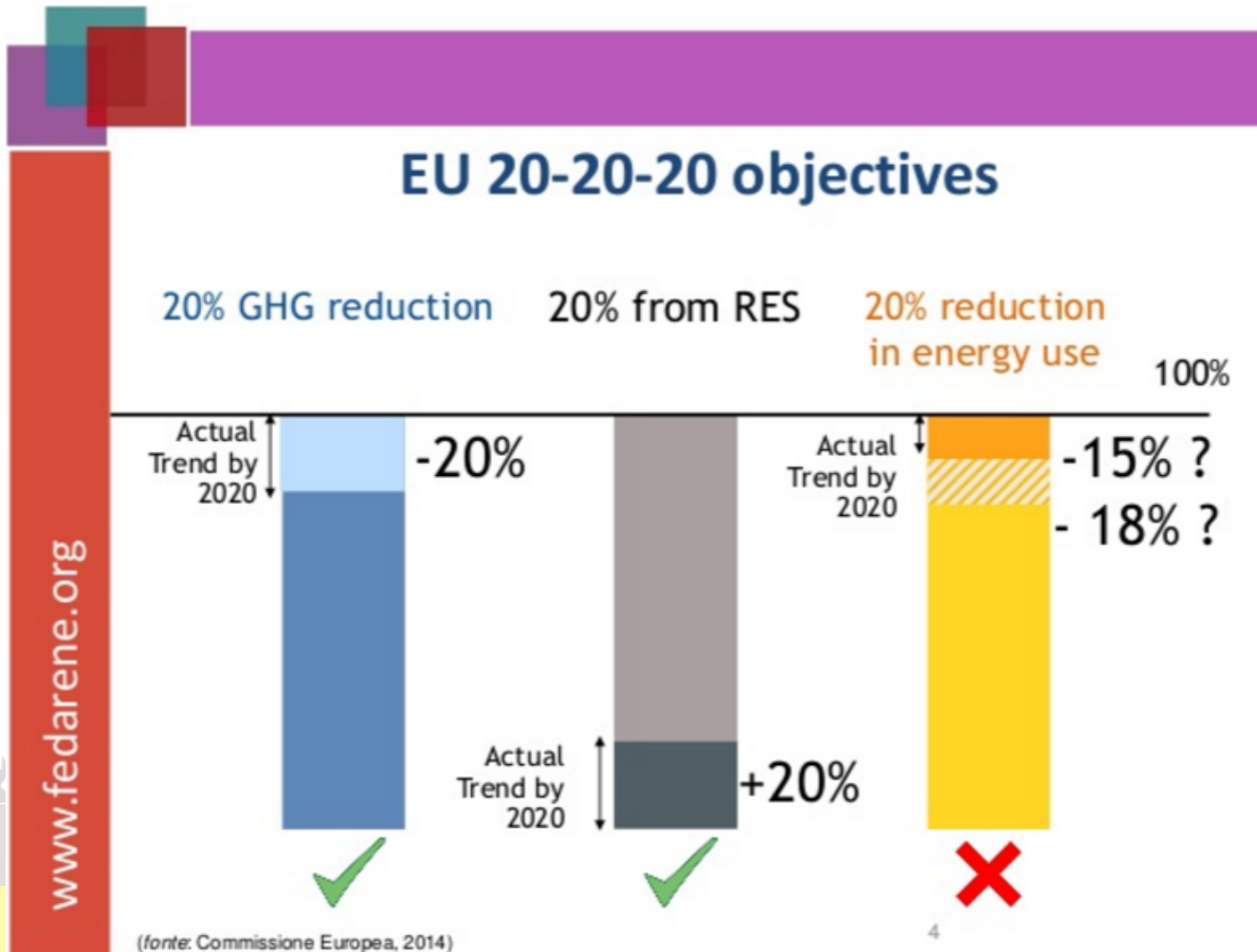
RENEWABLE

NON-RENEWABLE



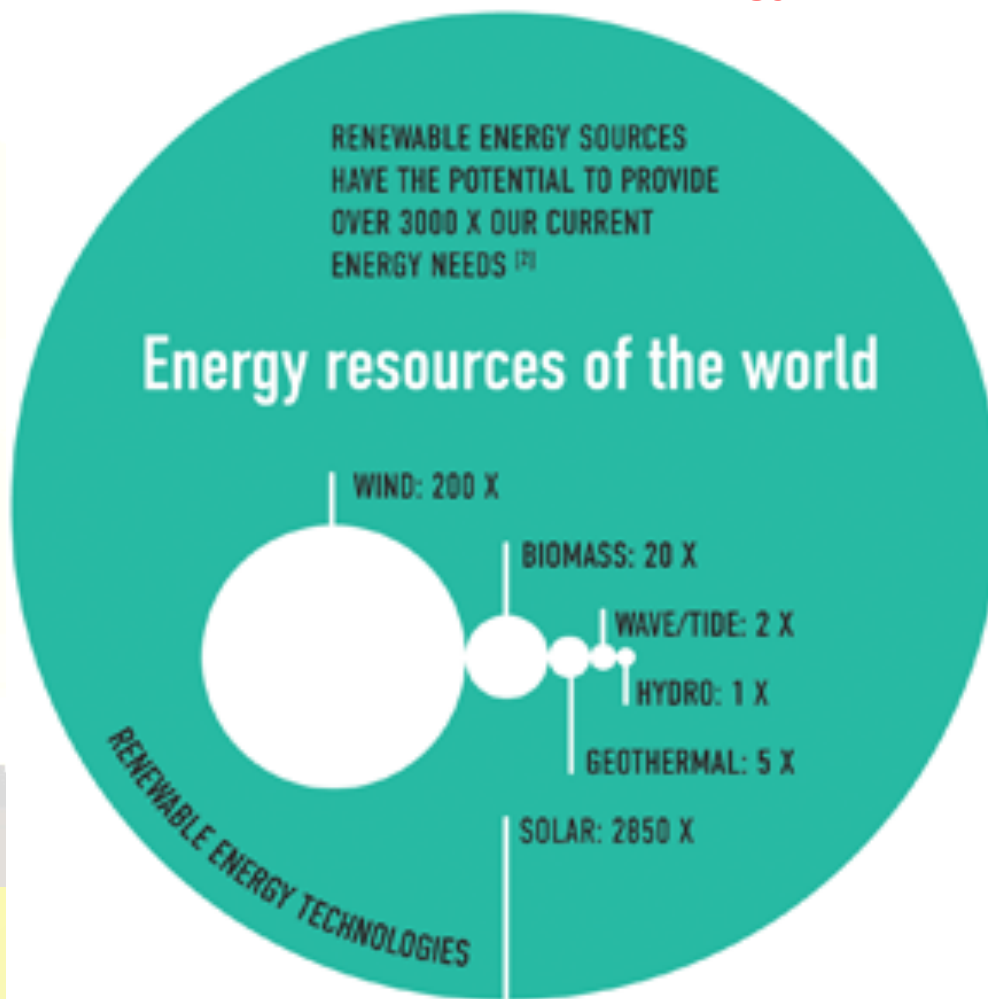


MEETING EU 20-20-20 GOALS BY 2020



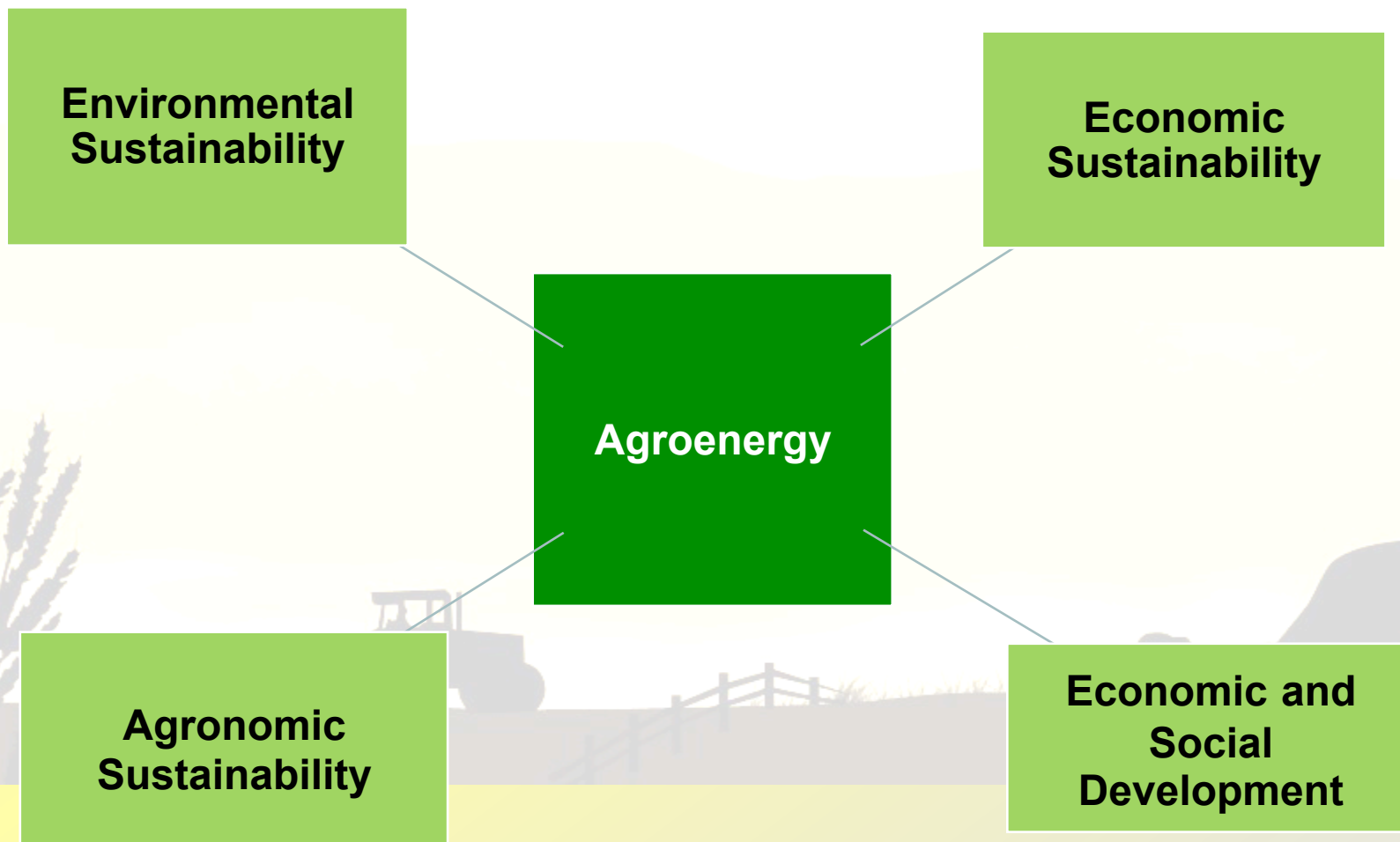
OVERVIEW ON WORLD RENEWABLE ENERGY

The most popular Renewable Energy Sources





USE OF AGRO-ENERGIES





FARM AGRO-ENERGY INTEGRATION

Agro-energy production is supposed not to substitute food crops, but, as well as for other kind of multifunctional activities, to be integrated in the farm business plan. Benefits for farmers consist mainly of:

- energy cost saving up to possible extra-income from agro-energy selling;
- use and valorisation of farm waste and residues;
- improve farm environmental performance in compliance with the Common Agricultural Policy Green Direct Payment (“greening”)
- reduction of greenhouse gases (GHG) from farming.

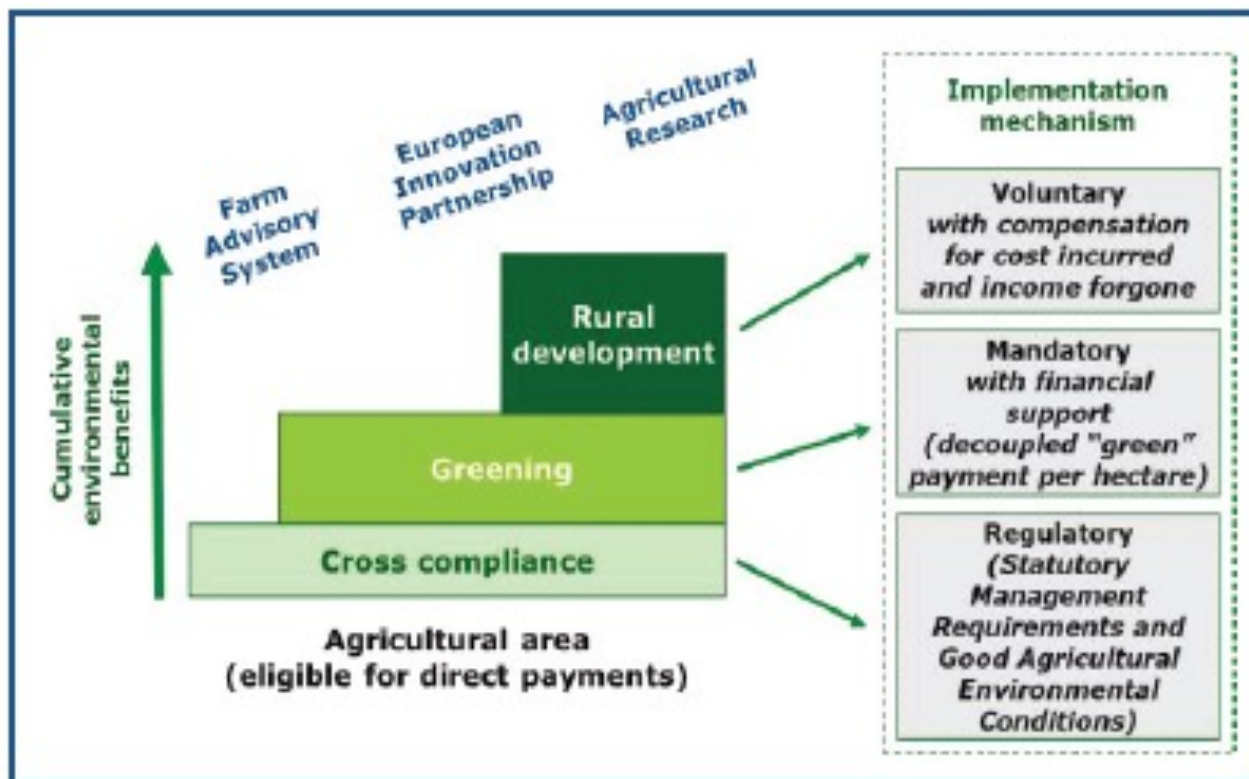


CAP AND GREENING INTEGRATION

Greening supports action to adopt and maintain farming practices that help meet environment and climate goals.

Green direct payments account for 30% of EU countries' direct payment budgets. Provisions:

- diversifying crops
- maintaining permanent grassland
- dedicating 5% of arable land to 'ecologically beneficial elements'

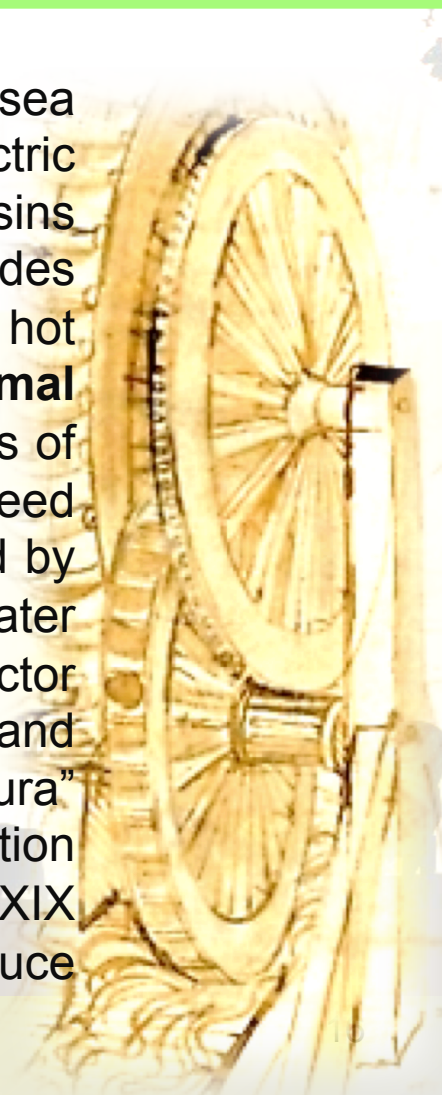


Greening integration in the Common Agricultural Policy
Source DG Agriculture and Rural Development Dec. 2013



FARMING AND HYDRO-POWER

Water is a powerful renewable energy source. From ocean and sea waves and tides dynamic energy can be transformed into electric power; fresh water of rivers can be contained in large basins equipped with dams and released making waterfalls and cascades to produce **hydropower** generated by turbines. Thermal hot springs can be also used to produce energy from **hydro-thermal power** plants, largely first energy source in Iceland. Those kinds of energies are mostly produced in very big plants and need sophisticated technologies, so they are not commonly managed by farmers. The most popular and traditional plant to transform water dynamic movement into energy in the agriculture and food sector are water mills, existing since times of Roman empire and described by **Vitruvio** in his most famous work “De architectura” and widespread all over Europe in the middle age, up to affirmation of the steam engine, when they declined, even if in use until the XIX century and up today in some examples still in operation to produce traditional cereal flours.





FARMING AND SOLAR ENERGY

Sun was considered by all most important ancient civilizations, Egyptians, Greeks, Romans Maya, Aztec, Celts, etc. the power of life itself. Monuments had to be built high and powerful to honor the cult of the sun. **Archimedes**, the renowned mathematician, was said to have used a burning glass as a weapon in 212 BC, when Syracuse was besieged by the Roman fleet. Solar energy is then well known since a long time and **sun heating power** was used by a lot of devices, but only recently have been developed **photovoltaic technology**. It consists of several components, including solar panels to absorb and convert sunlight into electricity, solar inverter to change from direct (DC) to alternative current (AC), other electrical accessories to set up a working system.

This technology has become very popular also because of decreasing price of devices and widespread in rural areas, mostly on roofs of sheds and greenhouses.

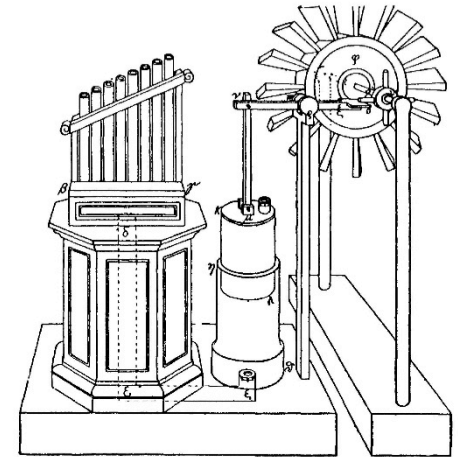




FARMING AND WIND ENERGY

Wind is also, as water, a natural energy source used by humans since ancient times. The **windwheel** of the Greek engineer **Heron of Alexandria** in the first century is the earliest known wind-driven wheel to power a machine. By the end of the thirteenth century, the masonry tower mill, on which only the cap is rotated rather than the whole body of the mill, followed by the smock mill and windmill sail, having from 4 up to 8 sails, as evolution of the previous old structures and more largely widespread in Portugal, Spain, Netherlands and Greece. Even if based on similar principles, gears inside windmill have changed a lot down through the centuries.

The modern technological windmill producing energy power is the last model able to produce electricity and has been particularly developed under the name of **wind farms**, offshore, as in Denmark and NL, up in mountains and high hills or in large rural areas, where farmers are also involved, i.e. in the province of Flevoland (NL).



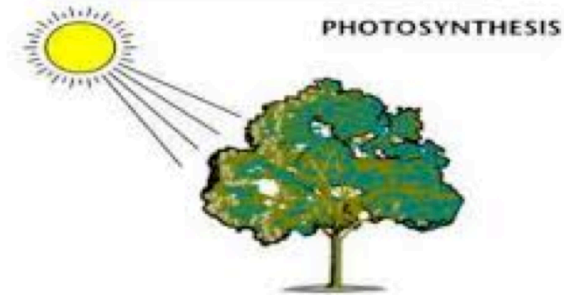
FARMING AND BIOMASS FOR AGRO-ENERGY

Biomass is any organic matter, such as wood, crops and their pruning and residues, animal wastes, etc. that can be used as an energy source.

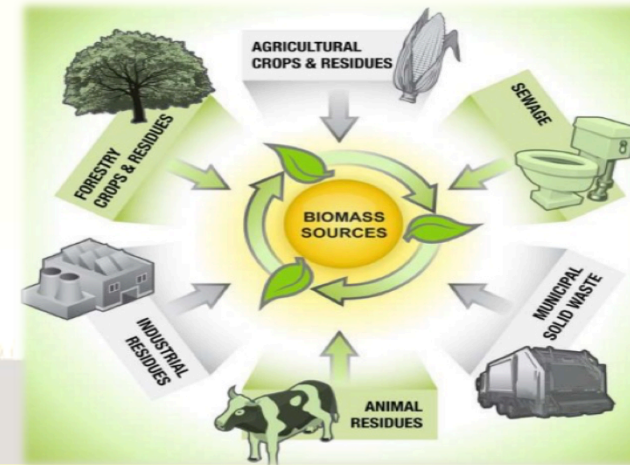
Biomass as all organic matter is included in a virtuous circle getting its energy from the sun. During the photosynthesis process, sunlight gives plants the energy they need to convert water and carbon dioxide into oxygen and sugars. These sugars, called carbohydrates, supply plants and the animals that eat plants, with energy and also provide humans with a good source of energy. Biomass is a renewable energy source because its supplies are not limited: it is possible to grow trees and crops without limits, and their waste will always continue to exist.

In the very last years, after a boom of dedicated energy crops, it is more stimulated research on crops and wastes residues as a more sustainable solution within the vision of foot print reduction and circular economy.

Photosynthesis Process



In the process of photosynthesis, plants convert radiant energy from the sun into chemical energy in the form of glucose - or sugar.



BIOMASS EXPLOITATION

Biomass can be turned into useful forms of energy with different processes. The main products of these processes are:

- Energy in form of electricity
- Energy as heat
- Fuels for transport or energy power



The main processes for the conversion and exploitation are:

- 1) Thermo-chemical processes
- 2) Biochemical processes
- 3) Mechanical processes for biodiesel production (by esterification)

BIOMASS FOR ENERGY AND RES IN THE EU

The last trends on use of **raw materials for agro-energy** have shifted from mostly intensive dedicated crops to food and livestock waste, scrap and crop chopping, logging residues, etc. mixed and transformed into energy.

Farmers' associations, environment experts and agriculture policy makers have re-oriented the intensive use of crops for energy to **sustainable use of waste and residues**, maintaining the essential food function of arable lands.

Waste and residue recycling has been considered on the last papers of the European institutions more sustainable than growing energy crops with consequent wide reduction of food cultivations.





You say you love your children above all else, and yet you are stealing their future in front of their very eyes.

- Greta Thunberg



THANK YOU FOR YOUR KIND ATTENTION